What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. An apparatus for aligning an optical axis with respect to an optical device comprising:

a first opto-mechanical lens assembly having a first optical axis, said first optical axis being angularly adjustable via a spherically shaped bearing surface pivoting about a specified first fixed point;

a second opto-mechanical lens assembly having a second optical axis, said second optical axis being angularly adjustable via a spherically shaped bearing surface pivoting about a specified second fixed point, said second optical axis being co-axial to said first optical axis;

means for mounting said first opto-mechanical lens assembly co-axial with said second opto-mechanical lens assembly wherein said first fixed point and said second fixed point are nearly coincident and located at said optical device to be tested so that angular adjustments of either said first opto-mechanical lens assembly or said second opto-mechanical lens assembly do not translate said first optical axis and said second optical axis laterally;

means for adjusting said second opto-mechanical lens assembly laterally;

PEARSON & PEARSON, LLP
PATENT ATTORNEYS
GATEWAY CENTER
10 GEORGE STREET
LOWELL, MA 01852
(978) 452-1971

means positioned between said first opto-mechanical lens assembly and said second opto-mechanical lens assembly for receiving said optical device; and

means for laterally centering said optical device about said first optical axis of said first opto-mechanical lens assembly and said second optical axis of said second opto-mechanical lens assembly.

2. The apparatus as recited in Claim 1 wherein said optical device comprises a dense wavelength division multiplexer filter.

3. The apparatus as recited in Claim 1 wherein said apparatus comprises means for providing a light source to said first opto-mechanical lens assembly.

4. The apparatus as recited in Claim 3 wherein said apparatus comprises means for analyzing a light output from said second opto-mechanical lens assembly.

5. The apparatus as recited in Claim 1 wherein said means for receiving said optical device comprises an intermediate xy table having a platen with a flat surface.

PEARSON & PEARSON, LLP
PATENT ATTORNEYS
GATEWAY CENTER
10 GEORGE STREET
LOWELL, MA 01852
(978) 452-1971

6. The apparatus as recited in Claim 5 wherein said apparatus comprises means for applying a vacuum to fix said optical device onto the surface of said platen.

7. The apparatus as recited in Claim 6 wherein said means for applying a vacuum to fix said optical device comprises a vacuum pump connected to a vacuum valve controlled by a valve controller.

8. The apparatus as recited in Claim 5 wherein said platen comprises a plate having three layers including a metal layer attached to a base of said platen, an intermediate polished glass layer for supporting said optical device, and an upper glass layer that partially overlies said intermediate layer to position said optical device over a vacuum port through a center of said platen which is centered on said first optical axis of said first opto-mechanical lens assembly.

9. An optical filter measuring system comprising:

a measurement apparatus, said measurement apparatus comprises an optical assembly having an optical axis and a lens for directing a light beam along said optical axis;

PEARSON & PEARSON, LLP
PATENT ATTORNEYS
GATEWAY CENTER
10 GEORGE STREET
LOWELL, MA 01852
(978) 452-1971

means, positioned along said optical axis and spaced apart from said optical assembly, for detecting said light beam after passing through an optical filter;

means for providing a light source to said measurement apparatus;

means, coupled to said light source providing means, for detecting reflected light from said measurement apparatus;

a computer, connected to said measurement apparatus and said light source means, for controlling said measurement apparatus and said light source means and for processing measurement data for each optical filter being analyzed by said measurement apparatus;

means coupled to said light beam detecting means for analyzing measurement data from said light beam detecting means;

means, disposed adjacent to said optical assembly and said light beam detecting means, for positioning each of a plurality of optical filters between said optical assembly and said light detecting means for measurements in accordance with control signals from said computer; and

means for generating and applying a vacuum under control of said computer to said optical assembly to position said optical filter in a correct position for measurement.

PEARSON & PEARSON, LLP
PATENT ATTORNEYS
GATEWAY CENTER
10 GEORGE STREET
LOWELL, MA 01852
(978) 452-1971

10. The optical filter measuring system as recited in Claim 9 wherein said optical assembly comprises means for angularly adjusting said optical axis via a spherically shaped bearing surface pivoting about a fixed point.

11. The optical filter measuring system as recited in Claim 10 wherein said means for angularly adjusting said optical axis comprises a pair of linear displacement adjustment mechanisms positioned preferably at a right angle with respect to each other and controlled by said computer to maximize reflected light, thereby establishing said optical axis normal to said filter.

12. The optical filter measuring system as recited in Claim 1 where said optical filter includes a dense wavelength division multiplexer filter.

13. The optical filter measuring system as recited in Claim 9 wherein said optical filter positioning means comprises an xyz table which moves in accordance with said control signals received from said computer.

PEARSON & PEARSON, LLP
PATENT ATTORNEYS
GATEWAY CENTER
10 GEORGE STREET
LOWELL, MA 01852
(978) 452-1971

14. The optical filter measuring system as recited in Claim 9 wherein said light beam detecting means comprises an extended area light sensor.

15. The optical filter measuring system as recited in Claim 9 wherein each optical filter is positioned against an end portion of said optical assembly by means for providing a vacuum and computer control of said vacuum.

16. The optical filter measuring system as recited in Claim 9 wherein said computer provides a display of test results calculated from said measurement data.

17. The optical filter measuring system as recited in Claim 9 wherein said light source means comprises a variable frequency laser.

18. The optical filter measuring system as recited in Claim 9 wherein said computer comprises a program for analyzing, displaying and storing said measurement data for each of said optical filters.

19. A computer controlled system for measuring DWDM filters comprising:

PEARSON & PEARSON, LLP
PATENT ATTORNEYS
GATEWAY CENTER
10 GEORGE STREET
LOWELL, MA 01852
(978) 452-1971

an optical assembly having an optical axis which is angularly adjustable via a spherical shaped bearing surface pivoting about a fixed point located at said DWDM filters;

an extended area light detector positioned along said optical axis and spaced apart from said optical assembly for detecting a light beam after passing through one of said DWDM filters;

a variable frequency laser generator for providing said light beam to said optical assembly;

a computer, connected to said optical assembly, said variable frequency laser generator and said reflected light detector, for controlling the measurement of each of said DWDM filters;

an electrical interface connected to said extended area light detector to provide optical power data to said computer and a computer program for analyzing, displaying and storing measurement data for each of said DWDM filters;

an xyz table controlled by said computer and disposed adjacent to said optical assembly for positioning each of said DWDM filters between said optical assembly and said extended area light detector for measurement; and

a vacuum pump connected to said optical assembly for raising each of said plurality of DWDM filters to contact an end of said optical assembly during said measurement.

PEARSON & PEARSON, LLP
PATENT ATTORNEYS
GATEWAY CENTER
10 GEORGE STREET
LOWELL, MA 01852
(978) 452-1971

20. The computer controlled system as recited in Claim 19 wherein said optical assembly comprises a pair of linear displacement adjustment mechanisms preferably located at a right angle with respect to each other and controlled by said computer for adjusting said optical axis to maximize reflected light power.

PEARSON & PEARSON, LLP
PATENT ATTORNEYS
GATEWAY CENTER
10 GEORGE STREET
LOWELL, MA 01852
(978) 452-1971